橡胶沥青混合料疲劳性能研究

Research on Fatigue Properties of Asphalt Rubber Mixtures

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中文摘要

参考美国AASHTO TP8标准要求，根据中国沥青混合料的成型现状，采用MTS材料试验机控制加载，选择改进的三分点加载小梁弯曲疲劳试验评价了亚利桑那州体系下的橡胶沥青混合料的疲劳性能。试验结果表明：橡胶沥青混合料的疲劳寿命与应变水平有着很好的线性关系；使用了间断级配和高沥青用量的橡胶沥青混合料的疲劳性能明显好于一般AC-13级配下的SBS改性沥青混合料和基质沥青混合料；橡胶沥青混合料优异的疲劳性能与高温稳定性，与沥青与级配有密切关系。

英文摘要

According to AASHTO TP8 in American standard specification, three point bending fatigue loading test method was modified to evaluate the fatigue properties of asphalt rubber (AR) mixture according to Arizona specification. Material test system was used to strain-control mode. Test result shows that the relation between fatigue life and strain level of AR gap-graded mixture is in a good linearity. Compared to traditional AC-13 gradation mixture which two conventional binders including polymer-modified asphalt (PMA) and conventional asphalt are used, AR gap-graded mixture indicates a better fatigue performance. Rutting test also is used to evaluate the high temperature performance, AR gap-graded mixture whose asphalt content is 1.6 times higher than PMA mixture's still shows same high temperature performance as PMA mixture. The excellent fatigue performance and high temperature performance of AR mixture is mainly due to three reasons: high crumb rubber content in asphalt make the AR super high performance, gap gradation make the mixture accommodate high asphalt content, high asphalt content and high crumb rubber content in asphalt make the AR mixture excellent fatigue performance.

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